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Tan

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(54) **DYNAMICALLY ORIENTING ADJUSTABLE SHELTER**

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E04H 15/42 (2006.01)
E04H 15/32 (2006.01)

(52) **U.S. Cl.**
CPC ***E04H 15/42*** (2013.01); ***E04H 15/322*** (2013.01)

(58) **Field of Classification Search**
CPC E04H 15/42; E04H 15/322; E04H 15/58
See application file for complete search history.

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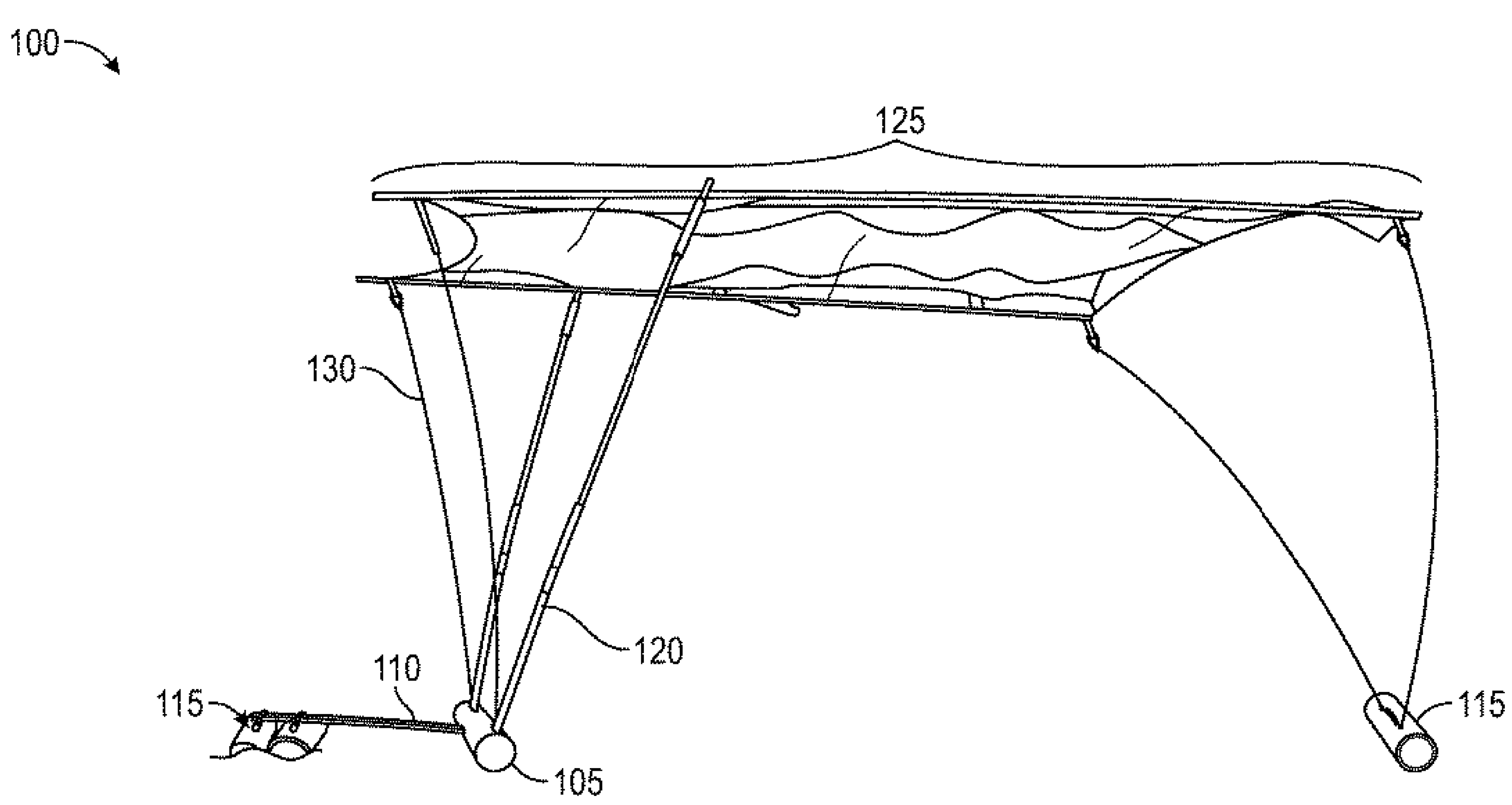
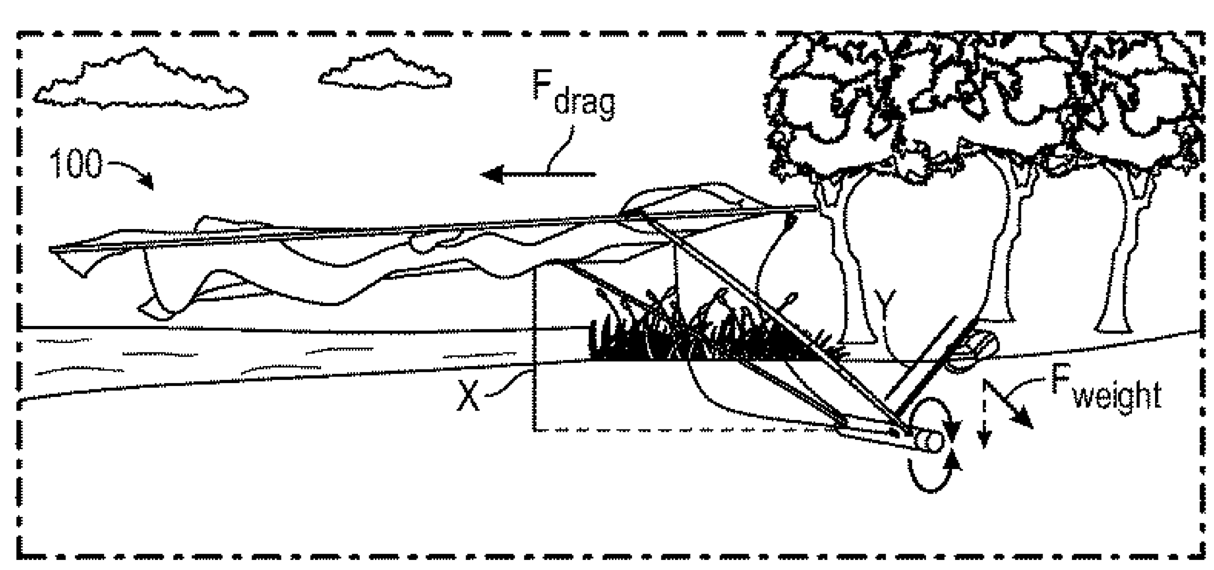
(57) **ABSTRACT**

A system for a dynamically orienting adjustable shelter is provided. The system generally comprises a base, lever arm, counterweight, boom, canopy, canopy supports, and support cables connected to said canopy supports. The boom and lever arm connect to the base in a way such that the boom may be in an upright position when a counterweight is placed on the lever arm. A canopy assembly may be rotatable attached boom in a way that allows it to rotate about said boom, which allows the canopy assembly to reduce the cross-sectional area of the canopy exposed to the wind. A cable may be attached to the front end of the canopy supports, which may prevent the back end of the canopy from tipping too far down when there is no wind that the system may use to stabilize the canopy by naturally reducing the cross-sectional area exposed thereto.

22 Claims, 7 Drawing Sheets





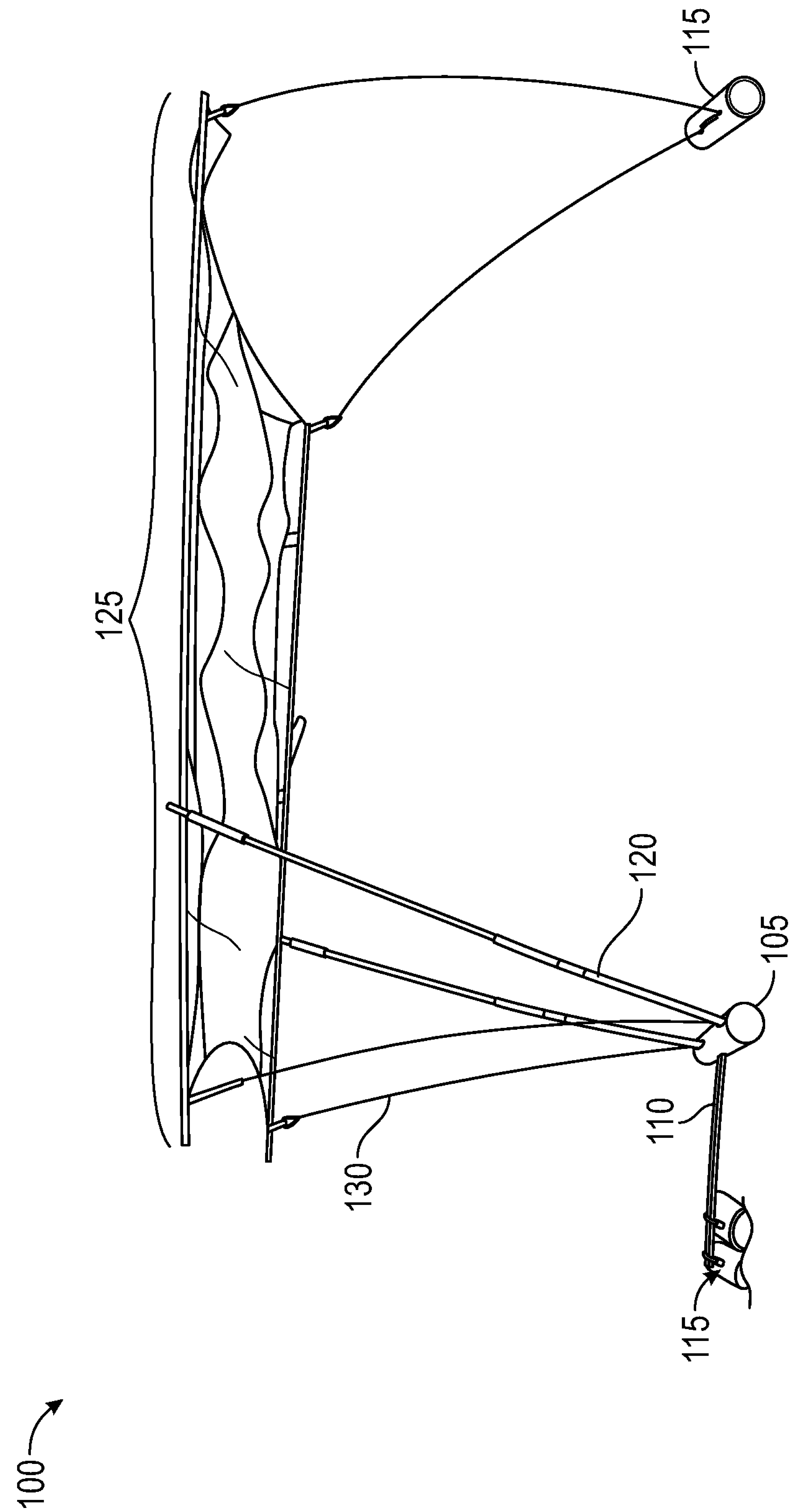


FIG. 1

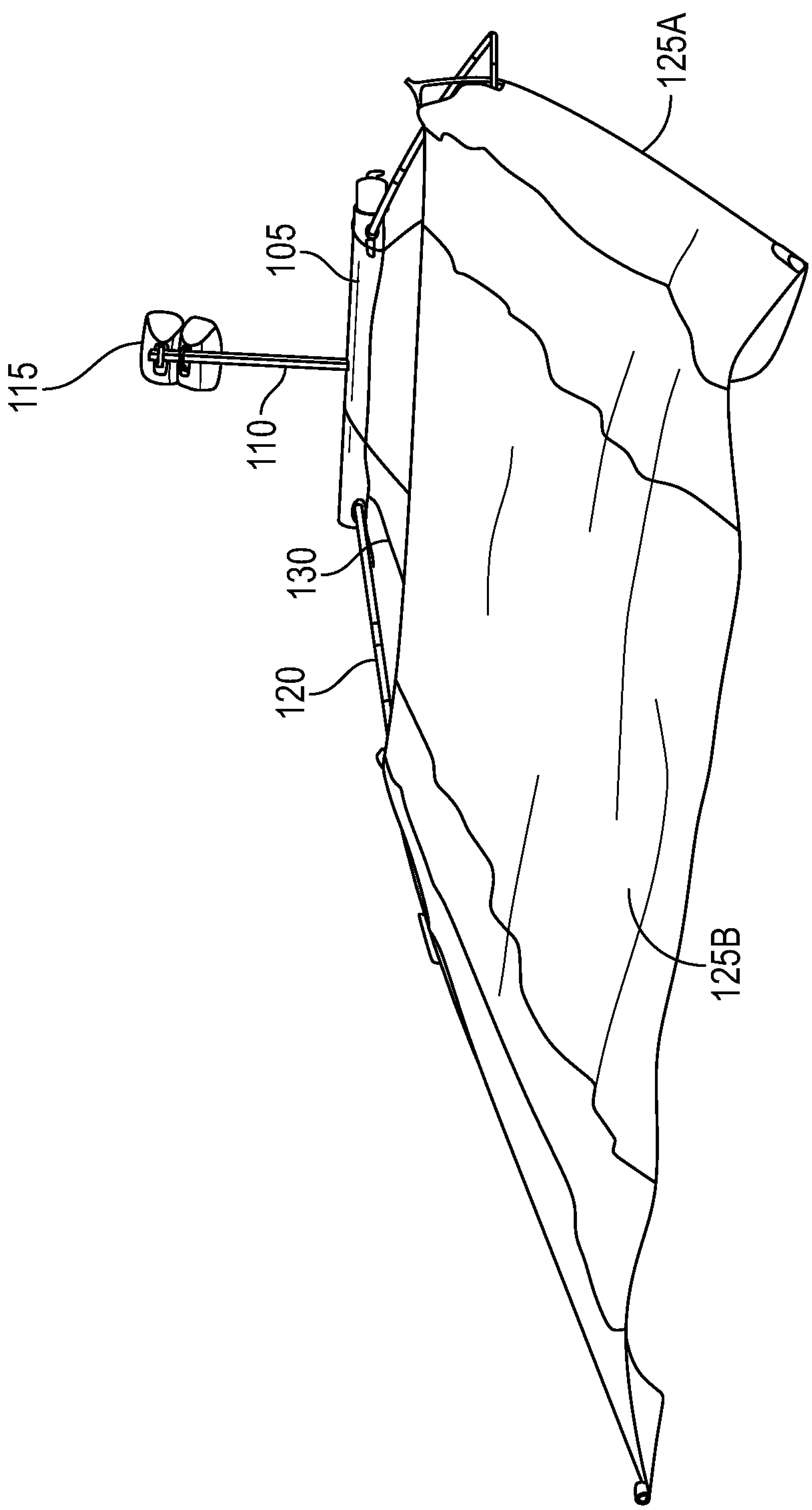


FIG. 2

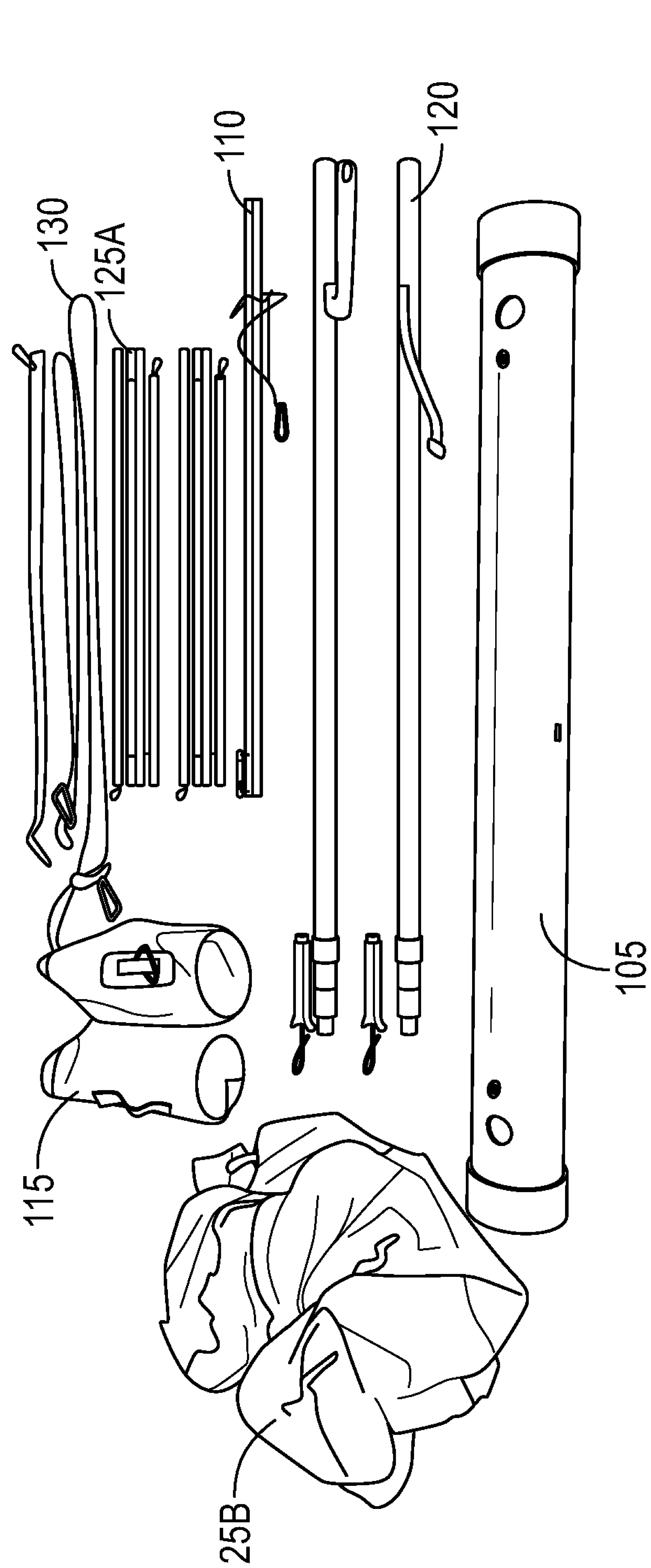


FIG. 3

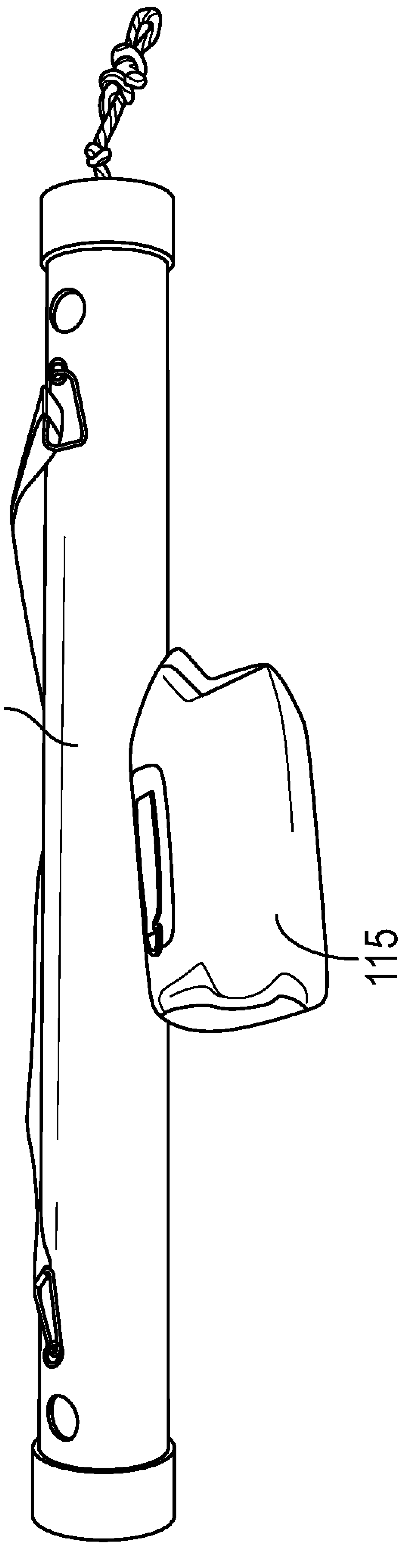


FIG. 4

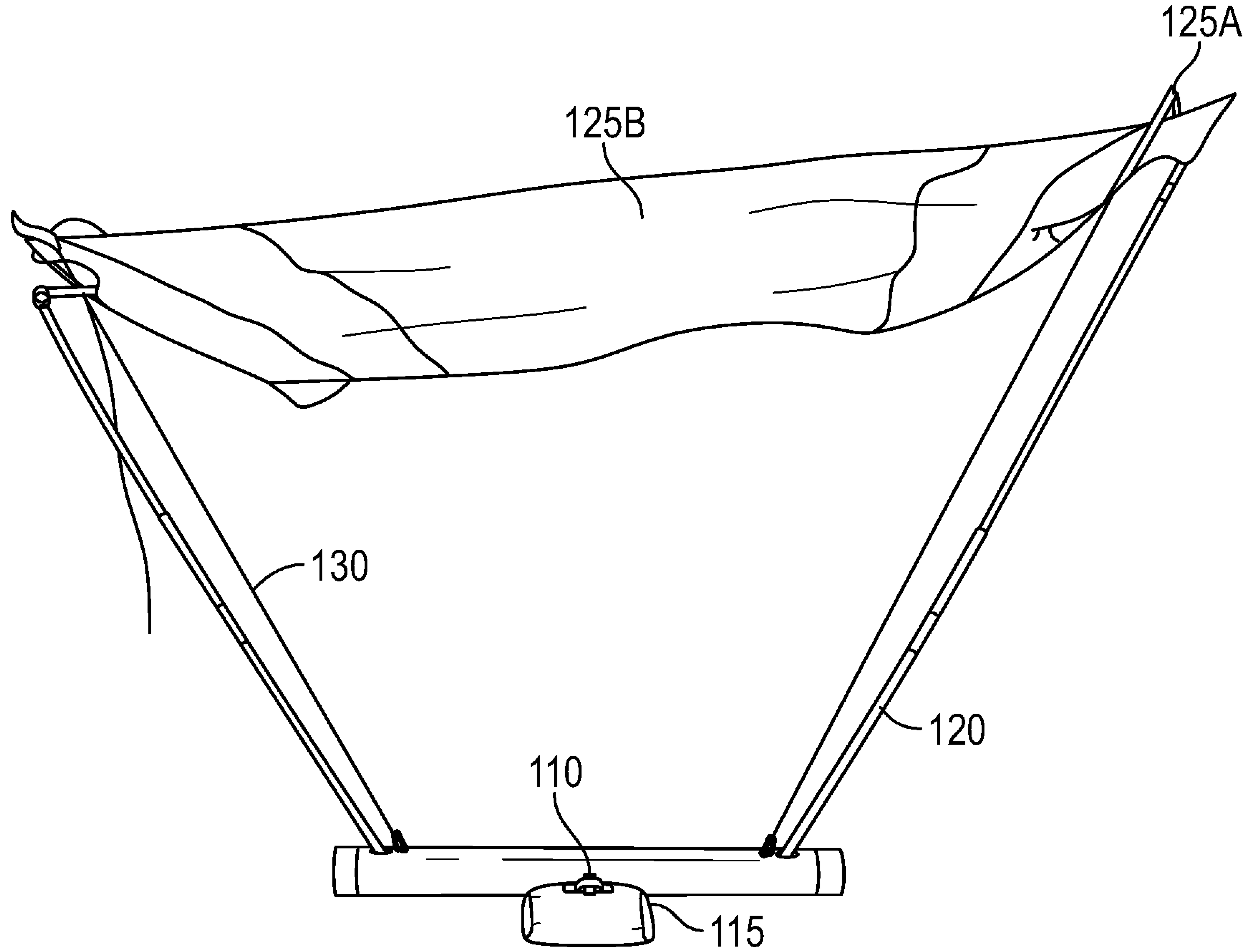


FIG. 5

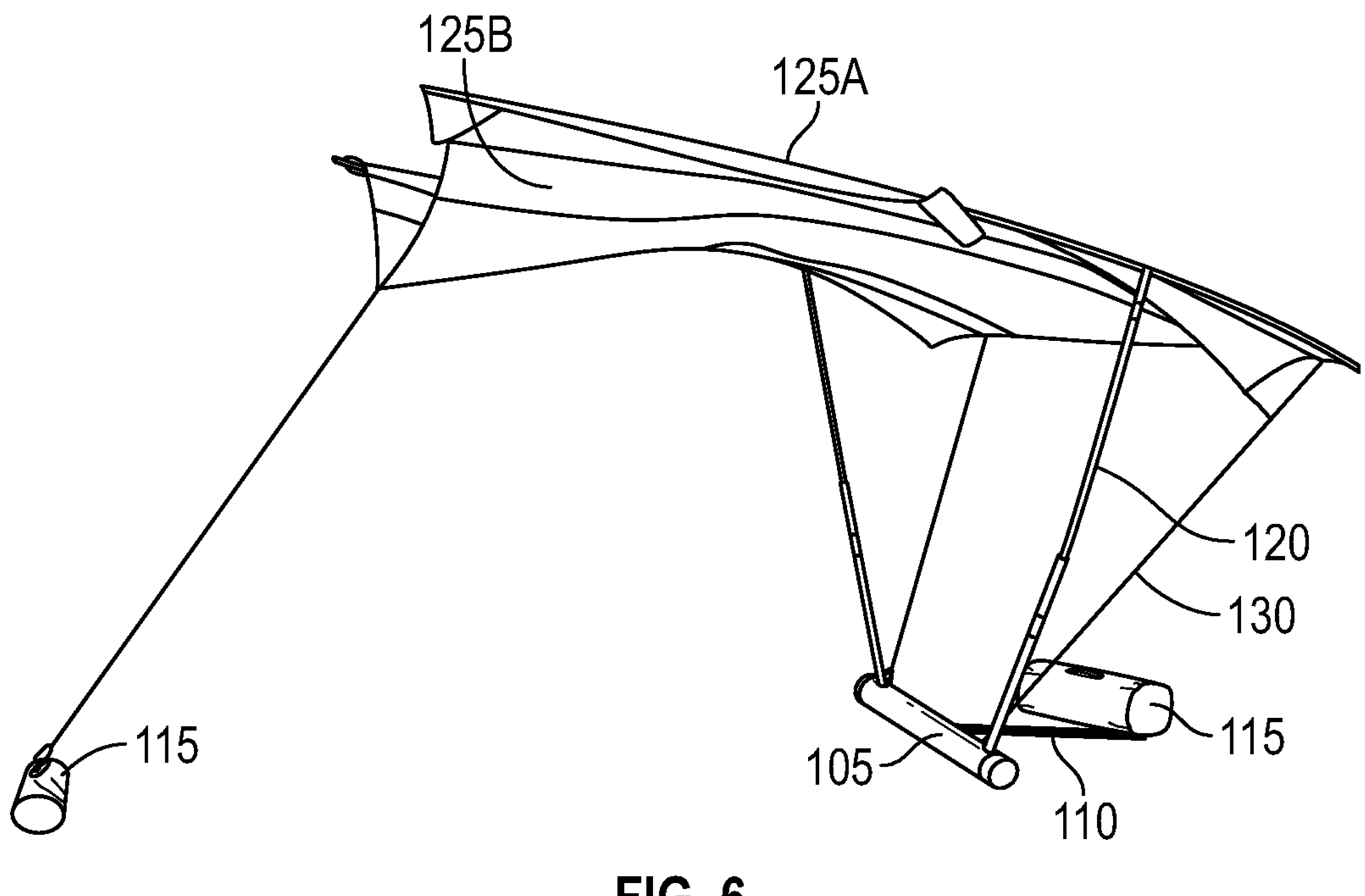


FIG. 6

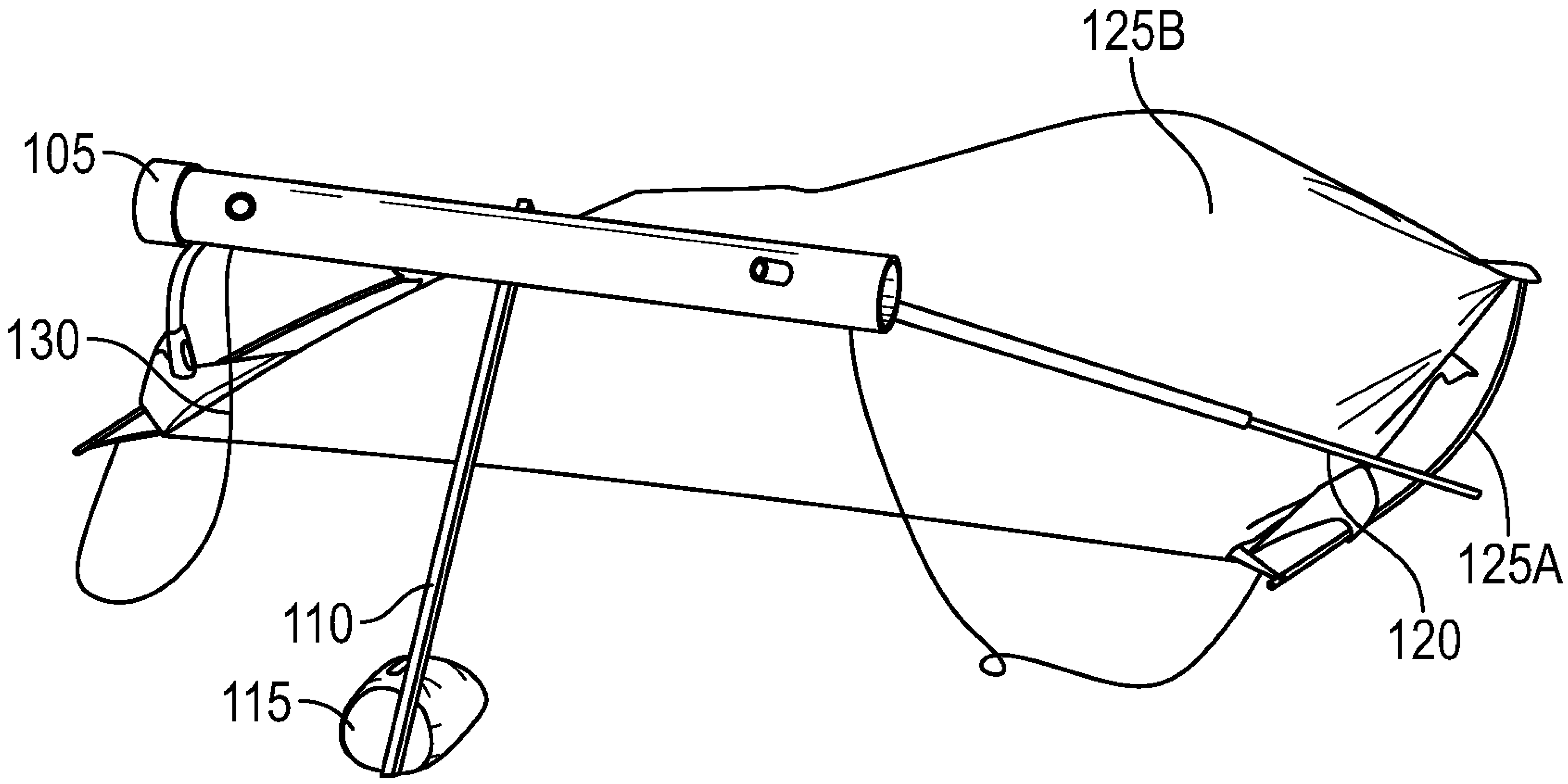


FIG. 7

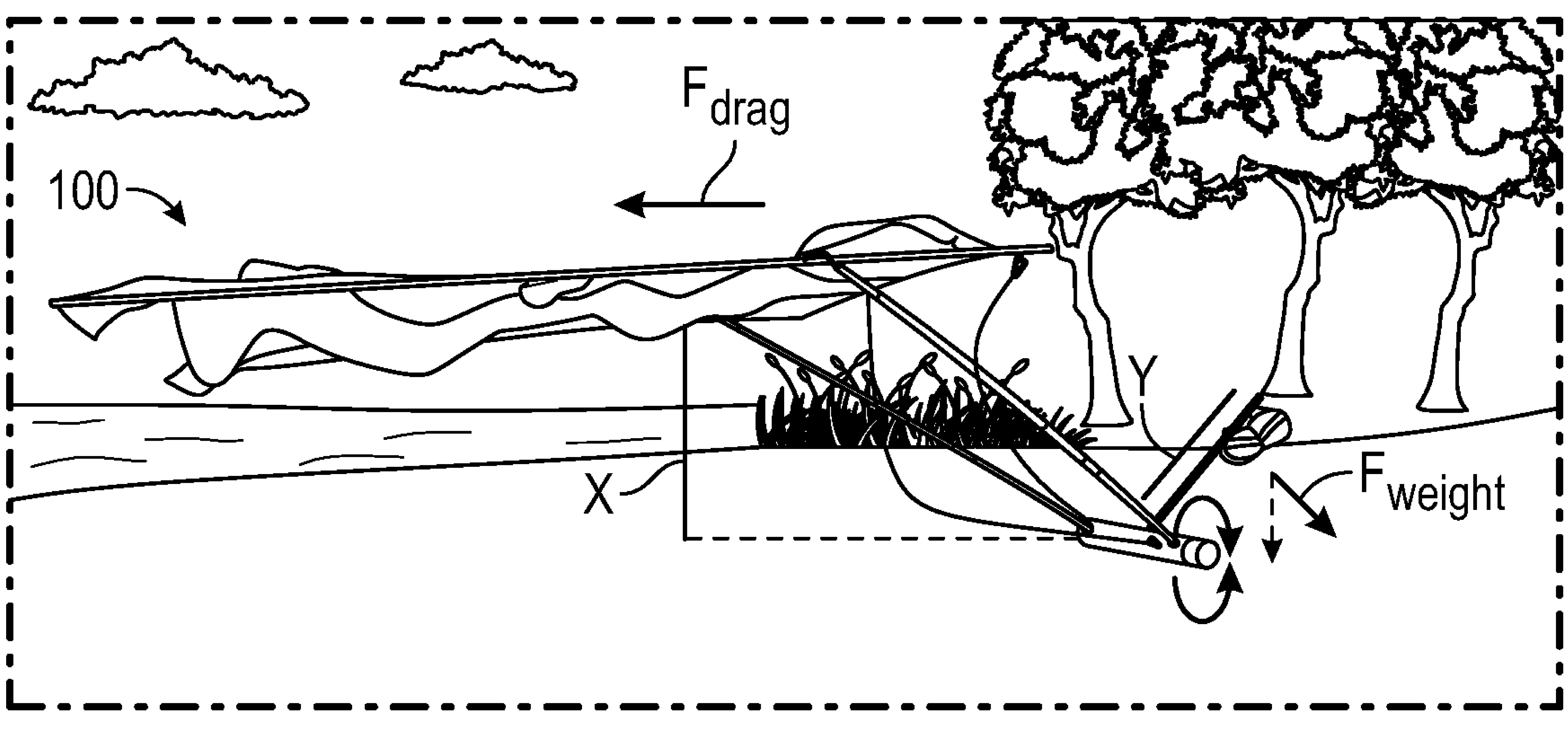


FIG. 8

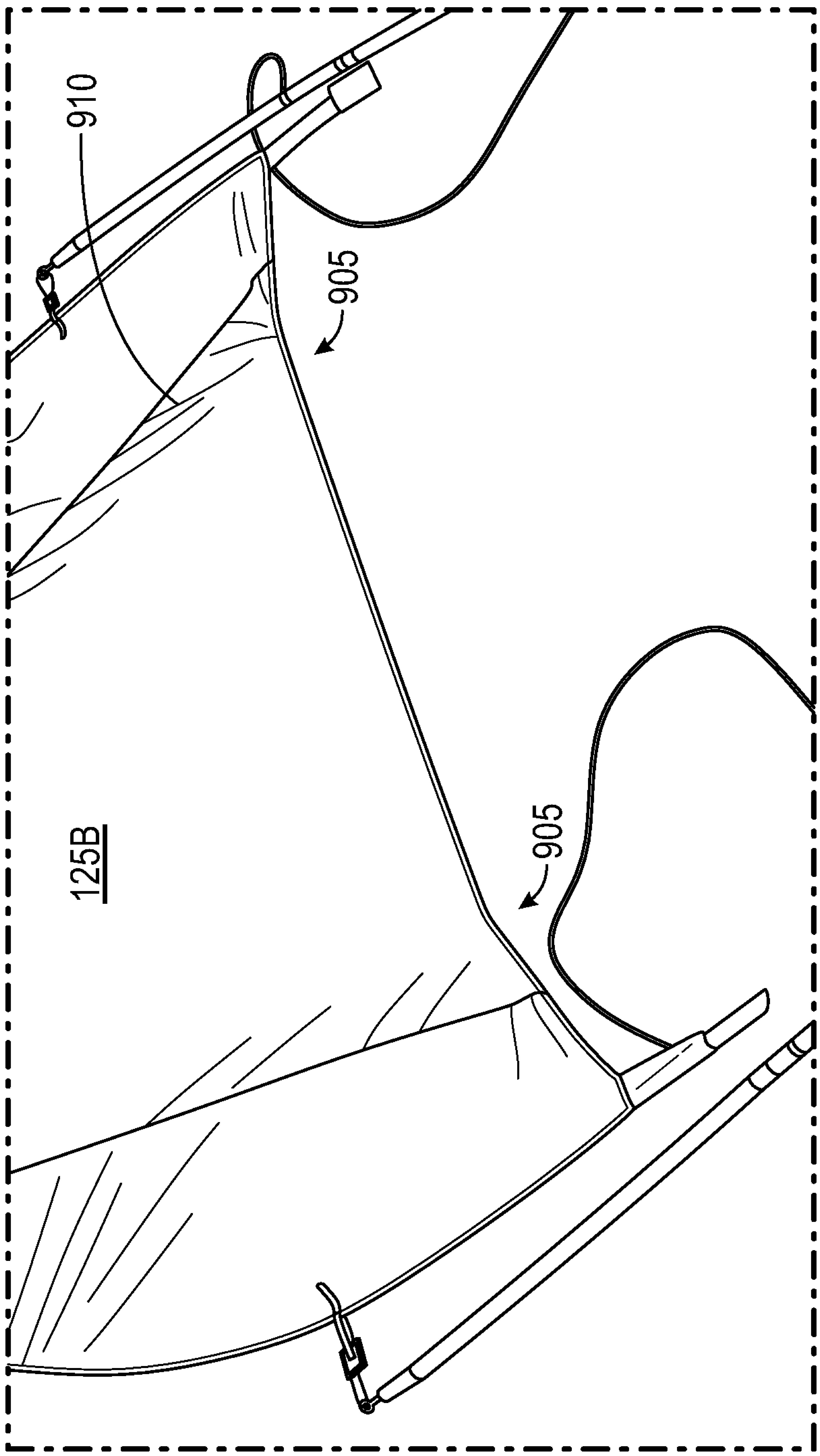


FIG. 9

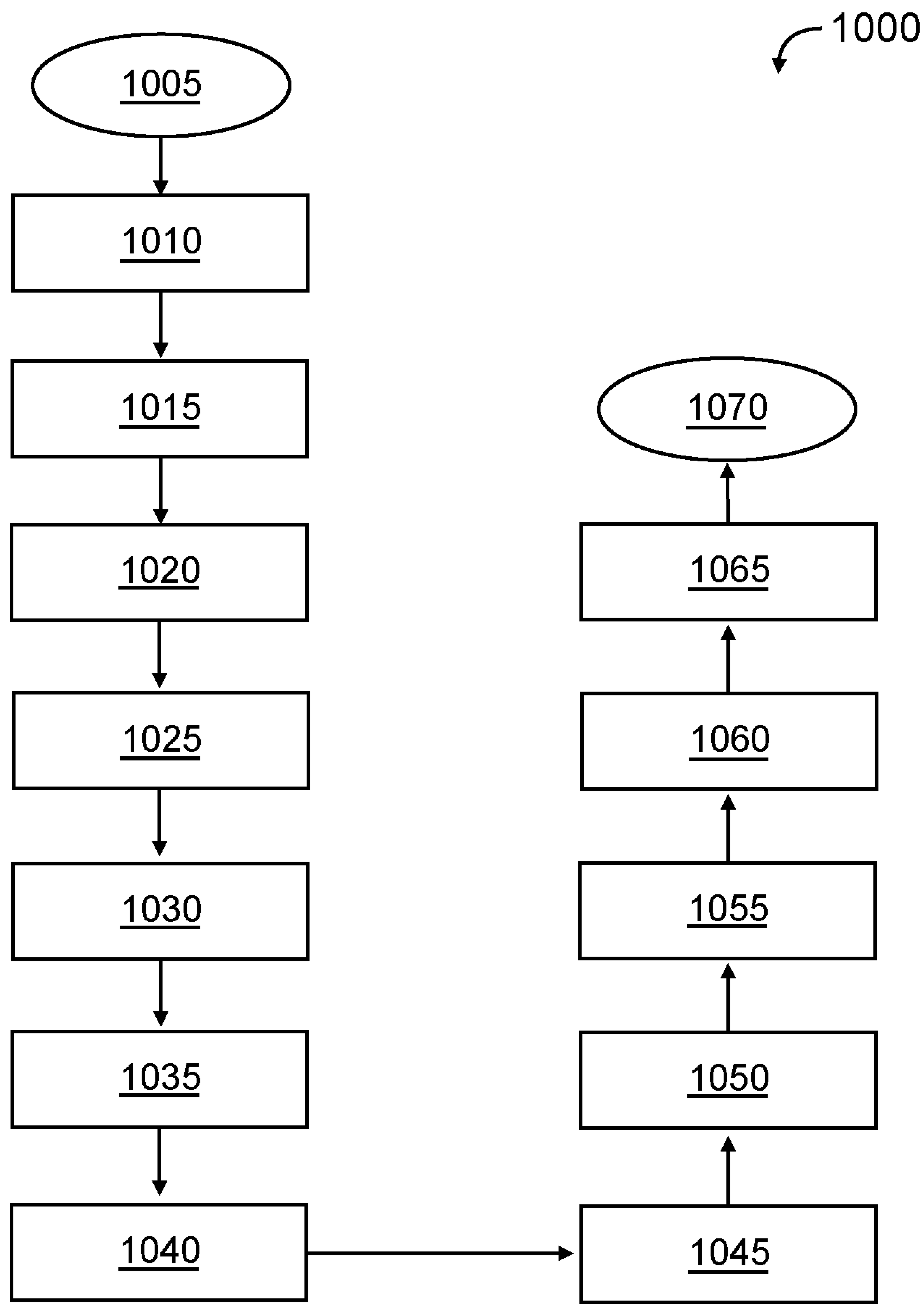

1000
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FIG. 10

DYNAMICALLY ORIENTING ADJUSTABLE SHELTER

This application claims the benefit of U.S. Provisional Application No. 63/071,168, filed on Aug. 27, 2020, wherein said Provisional Application is incorporated herein by reference.

FIELD OF THE DISCLOSURE

The subject matter of the present disclosure refers generally to a system that may act as a shelter from the elements in windy conditions.

BACKGROUND

As tents and pop-up canopies have become lighter and less expensive, it is becoming increasingly common for beachgoers to bring them as shelter should a storm surprise them or as a temporarily escape from the sun. However, tents and pop-up canopies tend to affect the beauty of the surround area by acting as an impenetrable wall through which no one can see. Additionally, trashed tents and pop-up canopies have become a major source of frustration for many municipalities since beachgoers often leave broken pop-up canopies and tents at the site in which they broke. This trash can create a danger to beachgoers since many of these tents and pop-up canopies contain metal that could potentially pose tetanus risks should an unsuspecting beachgoer step on a buried piece of the metallic trash. It can also pose problems for wildlife since the tensile material may act as a net from which wildlife may have trouble escaping.

One of the primary reasons current tents and pop-up canopies break is due to drag forces created by wind acting on the tensile materials. This is particularly true at the beach where winds often reach more than twenty miles per hour. The supporting structures of many tents and pop-up canopies are simply not designed to withstand much force, and in those types of conditions, the tensile materials act very much like parachutes, subjecting the frames to more force that originally designed. Even if the tents and pop-up canopies are designed to withstand more forces than the average tent/pop-up canopy are designed to withstand, the structures are often not designed to withstand forces in the way wind may apply them. This results in the destruction of the underlying structure, resulting in beachgoers leaving them behind as unsightly and potentially dangerous trash for others to collect. Even if the tent and pop-up canopies don't break, they still may be prone to flipping in windy conditions due to the drag forces acting on the tensile materials. These types of scenarios can lead to shelters taking flight with the wind and present a danger to surrounding people and property. Further, wind resistant tents currently known in the art are either wind-supported (and thus do not provide equal functionality on a windless day) or are not large enough to host multiple standing people.

Accordingly, there is a need in the art for a canopy system that may be subjected to large gusts without sustaining damage, present a low flyaway risk, and provide shelter with or without the presence of wind while limiting obstruction of the surrounding scenery.

SUMMARY

A system for a dynamically orienting adjustable shelter is provided. Generally, the system of the present disclosure is designed to provide the user a shelter in the form of a canopy that may protect the user from the elements during both windy and non-windy conditions. Alternatively, the system may be used as a portable shelter for rainy conditions in areas in which no or limited shelter may be available. The system generally comprises a base, lever arm, counterweight, boom, canopy, canopy supports, and support cables connected to said canopy supports. In one preferred embodiment, the system may further comprise a boom extension that may increase the length of the boom. In another preferred embodiment, the system may further comprise a plurality of tension straps that may be used to adjust the angle of the canopy supports.

The base comprises an extruded shape having a first end and a second end. In a preferred embodiment, the extruded shape is a cylinder. An outer wall of the base comprises a first aperture configured to fit a base end of the lever arm and second aperture configured to fit a bottom end of said boom. The lever arm connects to the base at said base end and a weight end extends away from said base such that the center of gravity of a counterweight attached to said weight end is in a position extending outward from and approximately central to a central point of said base. The counterweight preferably has a weight sufficient to overcome the torque created by the drag force acting on the canopy, the canopy weight, and the boom with the torque created by itself and the lever arm, wherein the drag force at a certain wind velocity may become large enough such that the torque created by the counterweight and lever arm may be overcome and the base may rotate the canopy back and eventually down.

The boom connects to the base at said bottom end and a canopy end extends away from said base at an angle from said lever arm that may allow a canopy support to be supported at an elevated position. In a preferred embodiment, the system comprises a first boom and second boom that functionally connects to said canopy support on a first side and second side. In a preferred embodiment, the canopy supports are attached to the boom in a way that allows it to rotate about said boom. By attaching the canopy support in this manner, the system may automatically adjust to windy conditions by allowing the canopy to naturally reduce the wind drag by causing the canopy support to rotate about the booms, which reduces the cross-sectional area of the canopy exposed to the wind. A cable may be attached to the front end of the canopy supports, which may prevent the back end of the canopy from tipping too far down when there is no wind that the system may use to stabilize the canopy by naturally reducing the cross-sectional area exposed thereto.

The foregoing summary has outlined some features of the system and method of the present disclosure so that those skilled in the pertinent art may better understand the detailed description that follows. Additional features that form the subject of the claims will be described hereinafter. Those skilled in the pertinent art should appreciate that they can readily utilize these features for designing or modifying other structures for carrying out the same purpose of the system and method disclosed herein. Those skilled in the pertinent art should also realize that such equivalent designs or modifications do not depart from the scope of the system and method of the present disclosure.

DESCRIPTION OF THE DRAWINGS

These and other features, aspects, and advantages of the present disclosure will become better understood with regard to the following description, appended claims, and accompanying drawings where:

FIG. **1** illustrates a system embodying features consistent with the principles of the present disclosure.

FIG. **2** illustrates a system embodying features consistent with the principles of the present disclosure.

FIG. **3** illustrates a system embodying features consistent with the principles of the present disclosure.

FIG. **4** illustrates a system embodying features consistent with the principles of the present disclosure.

FIG. **5** illustrates a system embodying features consistent with the principles of the present disclosure.

FIG. **6** illustrates a system embodying features consistent with the principles of the present disclosure.

FIG. **7** illustrates a system embodying features consistent with the principles of the present disclosure.

FIG. **8** illustrates a system embodying features consistent with the principles of the present disclosure being used within an environment.

FIG. **9** illustrates a system embodying features consistent with the principles of the present disclosure.

FIG. **10** illustrates a flow chart containing certain method steps of a method embodying features consistent with the principles of the present disclosure.

DETAILED DESCRIPTION

In the Summary above and in this Detailed Description, and the claims below, and in the accompanying drawings, reference is made to particular features, including method steps, of the invention. It is to be understood that the disclosure of the invention in this specification includes all possible combinations of such particular features. For example, where a particular feature is disclosed in the context of a particular aspect or embodiment of the invention, or a particular claim, that feature can also be used, to the extent possible, in combination with/or in the context of other particular aspects of the embodiments of the invention, and in the invention generally.

The term "comprises" and grammatical equivalents thereof are used herein to mean that other components, steps, etc. are optionally present. For example, a system "comprising" components A, B, and C can contain only components A, B, and C, or can contain not only components A, B, and C, but also one or more other components. Where reference is made herein to a method comprising two or more defined steps, the defined steps can be carried out in any order or simultaneously (except where the context excludes that possibility), and the method can include one or more other steps which are carried out before any of the defined steps, between two of the defined steps, or after all the defined steps (except where the context excludes that possibility).

FIGS. **1-10** illustrate preferred embodiments of a system **100**, or certain components thereof, that may be used as a dynamically orienting adjustable shelter. FIG. **1** illustrates a front perspective view of the system **100** and its various components. FIG. **2** illustrates a side perspective view of the system **100** and its various components in a grounded position **200**. FIG. **3** illustrates an exploded view of the system **100**. FIG. **4** illustrates an embodiment of the system **100** where the various components of the system **100** have been stored within the base **105** and counterweight **115** for transportation. FIG. **5** illustrates an embodiment of the system **100** having booms **120** at different heights to angle the canopy assembly **125**. FIG. **6** illustrates an embodiment of the system **100** in an upright position **600** having a second counterweight **115** attached to the back end of the canopy **125**B of the canopy assembly **125**. FIG. **7** illustrates the system **100** in a flipped position **700**. FIG. **8** illustrates an environmental view of how the system **100** may self-regulate in windy conditions. FIG. **9** illustrates a preferred embodiment of a canopy **125**B having a tightened leading edge **905**. FIG. **10** illustrates a flow diagraming **1000** outlining a method of assembling the system **100**.

The system **100** generally comprises a base **105**, lever arm **110**, counterweight **115**, boom **120**, and canopy assembly **125**. In one preferred embodiment, the system **100** may comprise cables **130** that may prevent the back end of the canopy assembly **125** from tilting too far down in conditions in which wind speeds are not high enough to allow the canopy **125**B to be naturally supported in an upright position **600** by the wind. In another preferred embodiment, the system **100** may comprise a boom extension that may increase the length of the boom **120**. In yet another preferred embodiment, the system **100** may comprise a plurality of tension straps that may be used to alter the amount of stress placed on the booms **120** as well as help adjust the angle of the canopy **125**B. Although the system **100** disclosed herein has been discussed in terms of use for shelter in remote locations, one of skill in the art will appreciate that the inventive subject matter disclosed herein may be utilized in other fields or for other applications in which shelter may be needed. For instance, the system **100** could be used in tandem with outdoor furniture distributed about an outdoor pool area.

As illustrated in FIGS. **1-8**, the base **105** comprises an extruded shape having a first end and a second end. In a preferred embodiment, the extruded shape is a cylindrical shape that allows the system **100** rotate in order to balance the various forces acting on the system **100**. In another preferred embodiment, the extruded shape is a hexagon, which may prevent the base **105** from rolling when a control arm and boom **120** are not attached while still allowing for the base **105** to rotate when the torque created by the drag force acting on the canopy **125**B, the canopy weight, and the boom **120** is balanced with the torque created by the counterweight **115** and the lever arm **110**, wherein the drag force may become large enough at a certain wind velocity such that the torque created by the counterweight **115** and lever arm **110** may be overcome and the base **105** may rotate the canopy **125**B back and eventually down. An outer wall of the base **105** comprises a plurality of apertures configured to accept various components of the system **100**. In another preferred embodiment, the base **105** may comprise a tread device. The tread device may provide friction that may prevent the base **105** from sliding but still allow the base **105** to freely rotate as it reacts to the forces acting on the system **100**. Devices that may act as a traction device include, but are not limited to, rubber treads, metal spikes, plastic cleats, or any combination thereof. In yet another preferred embodiment, the boom **120** and/or lever arm **110** may extend through the base **105** and act as the tread device. A tread device may be attached to the base end and/or bottom end of the lever arm **110** and boom **120**, respectively, which may provide additional friction that may further prevent the base **105** from sliding while still allowing the base **105** to rotate.

In a preferred embodiment, a first aperture configured to fit a base end of the lever arm **110** and a second aperture configured to fit a bottom end of said boom **120** are spaced such that said lever arm **110** and said boom **120** form an angle between 90 and 110 degrees. Other embodiments may form an angle between the lever arm **110** and boom **120** that is less than 90 degrees so that the center of gravity of the counterweight is over the fulcrum of the base **105** when the canopy **125**B is in a grounded position **200**, as illustrated in

FIG. **2**. Materials that may be used to construct the base **105** include, but are not limited to, polymer, aluminum, wood, fiberglass, or any combination thereof. In one preferred embodiment, a central bore extending from a first end to a second end of said base **105** may create an internal cavity for the storage of certain components. End caps may be used to enclose the internal cavity, and at least one of said end caps are preferably removeable.

The lever arm **110** connects to the base **105** at said base end and extends away from said base **105**. In a preferred embodiment, a lever arm **110** attaches to the base **105** via a first aperture located at a central point having an equal distance from the first end and second end of said base **105**. The lever arm **110** preferably connects to said base **105** at approximately a 90-degree angle such that the center of gravity of a counterweight **115** attached to a weight end of said lever arm **110** is in a position extending outward from and approximately central to a central point of said base **105**. Alternatively, a plurality of lever arms **110** may be positioned about said base **105** such that the center of gravity of a plurality of counterweights **115** attached to said plurality of lever arms **110** is in a position extending outward from and approximately central to a central point of said base **105**. Materials that may be used to construct the lever arm **110** include, but are not limited to, polymer, aluminum, iron, steel, carbon fiber, wood, fiberglass, or any combination thereof.

In one preferred embodiment, the lever arm **110** is curved and/or angled such that the angle made between the counterweight **115** and boom **120** is less than 90-degrees. Should the canopy **125**B and canopy support **125**A contact the ground due to winds placing a larger drag force on the system **100** than the torque generated by the lever arm **110** and counterweight **115** can balance, the weight of the counterweight **115** will place a downward force on the boom **120** that may prevent the system **100** from assuming an upright position **600**, thus locking the system **100** in this position. A user may reset the system **100** by moving the lever arm **110** and counterweight **115** until the weight of the counterweight **115** is no longer directly over said boom **120**, which may allow the system **100** to reassume an upright position **600**. Alternatively, the lever arm **110** may be curved and/or angled such that the angle made between the counterweight **115** and boom **120** is greater than 90-degrees, which may prevent the center of gravity of the counterweight **115** from crossing over the rotational fulcrum of the base **105**. This may allow the system **100** to resume an upright position **600** when the drag force on the canopy **125**B is lowered to a point that the torque created by the drag force acting on the canopy **125**B, the canopy weight, and the boom **120** is less than or equal to the torque created by the counterweight and the lever arm **110**.

The counterweight **115** attaches to the weight end of the lever arm **110** and creates a torque that acts on the system **100** as a balance to any drag force acting on the canopy **125**B. In a preferred embodiment, the counterweight is a container made from a flexible material and configured to hold a substance, such as rocks, dirt, or sand. Because the torque generated by the lever arm **110** and counterweight **115** depends on both the length of the lever arm **110** and the weight of the counterweight **115**, the weight of the counterweight **115** may vary. Generally, the weight of the counterweight **115** must be sufficient to balance the drag force acting on the canopy **125**B and the weight of the canopy **125**B so that the canopy assembly **125** may adjust about the boom **120** to expose the smallest cross section of the canopy **125**B to the wind as possible, as illustrated in FIG. **8**. In one preferred embodiment, the counterweight **115** may be removably attached to the lever arm **110** such that a user may remove the counterweight **115** prior to transportation of the system **100**, as illustrated in FIG. **4**.

In another preferred embodiment, the counterweight **115** may be incorporated into the lever arm **110** such that the lever arm **110** and counterweight **115** are a single unit. For instance, a lever arm **110** having a length of three feet and weight of twenty-five pounds may have a center of gravity that is significantly skewed towards the weight end so that the weight end may act as a counterweight **115** for the system **100**. In yet another preferred embodiment, the counterweight **115** may comprise a container that may be filled with a substance, which may allow a user to reduce the weight of the counterweight **115** while the user is transporting the system **100** to a desired location and increase the weight when the user assembles the system **100** by filling the container with said substance. For instance, a user may transport the system **100** to a beach and then fill a container with sand once they have reached a desired location. When the user is ready to break down the system **100**, the user may empty the container for easier transport.

In yet another preferred embodiment, a second counterweight **115** may be attached to the back end of the canopy assembly **125**, as illustrated in FIGS. **1** and **6**. When wind is blowing in the opposite direction in which the lever arm **110** and counterweight **115** are pointing, the second counterweight **115** may act as an anchor that may prevent the device from flipping. Though the canopy **125**B of a system **100** in a flipped position **700** will be grounded, as illustrated in FIG. **7**, the addition of a second counterweight **115** may be enough to prevent the system **100** from flipping all together. In a preferred embodiment, the second counterweight **115** is attached to the canopy supports **125**A of the canopy assembly **125**, as illustrated in FIG. **1**; however, the second counterweight **115** may be attached to the canopy **125**B of the canopy assembly **125** as well, as illustrated in FIG. **6**. In yet another preferred embodiment, a third counterweight **115** may be added to either or both ends of the base **105**, which may prevent the system **100** from blowing over sideways when exposed to a crosswind. Instead, the drag force created by the crosswind may cause the system **100** to rotate until the front end of the system **100** is facing the crosswind, allowing the system **100** to act as intended.

The boom **120** attaches to the base **105** at said bottom end and extends away from said base **105**. In one preferred embodiment, the boom **120** is foldable and comprises a plurality of tubular sections arranged about an elastic cord, wherein said tubular sections have interlocking ends that allow said tubular sections to be combined to create a single boom **120**. In another preferred embodiment, the boom **120** is telescoping to minimize the space occupied by the boom **120** when not in use. The telescoping boom **120** may be locked into a plurality of lengths, allowing a user to adjust the height of the canopy assembly **125** by adjusting the height of the boom **120**. This also may affect the torque created by the drag force acting on the canopy **125**B, the weight of the canopy **125**B, and the boom **120** since the reduced/increased length of the boom **120** will reduce/increase the amount of torque, respectively. In another preferred embodiment, a user may adjust the height of a first boom **120** higher than the height a second boom **120**, which may cause the canopy **125**B to no longer be generally parallel with the ground, as illustrated in FIG. **5**. This may allow a user to angle the canopy **125**B in a way that blocks sunlight when the sun is lower in the sky. Because the tensions straps connecting the canopy supports **125**A to the boom **120** are flexible, the system **100** may still work as intended since the canopy assembly **125** will still attempt to naturally reduce the cross-sectional area exposed to the wind despite the different angle of canopy assembly **125**.

Materials that may be used to construct the boom **120** include, but are not limited to, polymer, aluminum, iron, steel, carbon fiber, wood, fiberglass, or any combination thereof. In a preferred embodiment, a first boom **120** and a second boom **120** attach to the base **105** via a first boom **120** aperture and second boom **120** aperture having x, y, z coordinates that differ only in the value of z, wherein the z-axis extends centrally through said base **105** from said first end to said second end. The first boom **120** apertures and second boom **120** aperture are preferably located equal distances from the first end and the second end of the base **105** so that drag force acting on the base **105** via the canopy **125**B through the canopy support **125**A and boom **120** generally creates a force vector that is located about a central plane of said system **100**. The angle created by said boom **120** and said lever arm **110** allows the canopy support **125**A to be supported at an elevated position at a canopy **125**B end of said boom **120**.

The canopy assembly **125** may comprise a canopy **125**B and canopy supports **125**A. The canopy **125**B may be defined as a tensile structure that may provide shelter when attached to the canopy supports **125**A. The canopy supports **125**A may be defined as rigid beams to which a canopy **125**B may be attached. In a preferred embodiment, the canopy supports **125**A comprise a first canopy support **125**A attached to a first side of said canopy **125**B and a second canopy support **125**A attached to a second side of said canopy **125**B. Materials that may be used to make the canopy supports **125**A include, but are not limited to, polymer, aluminum, iron, steel, carbon fiber, fiber glass, wood, or any combination thereof. In a preferred embodiment, the canopy supports **125**A are foldable and comprise a plurality of tubular sections arranged about an elastic cord, wherein said tubular sections have interlocking ends that allow said tubular sections to be combined to create a single tubular support. In another preferred embodiment, the canopy supports **125**A may be telescoping. Materials that may be used to make the canopy **125**B include, but are not limited to, mesh, nylon, polyester, cotton, canvas, or any combination thereof. In a preferred embodiment, the canopy **125**B is water-resistant or water-proof such that it may provide protection from the elements when in wet conditions. In another preferred embodiment, the canopy **125**B may have an ultraviolet protection factor (UPF) such that it may provide protection from ultraviolet light in sunny conditions.

The canopy supports **125**A are preferably attached to the canopy **125**B via a plurality of attachment elements situated about the length of the canopy supports **125**A. In a preferred embodiment, the width of the canopy assembly **125** is less than the width of the space between the canopy **125**B ends of the first boom **120** and second boom **120**. When the first canopy support **125**A is connected to the first boom **120** and the second canopy support **125**A is connected to the second boom **120**, the stress placed on the first boom **120** and second boom **120** force the first canopy support **125**A and second canopy support **125**A away from one another, which in turn cause the canopy **125**B to become taut. In a preferred embodiment, the canopy assembly **125** is attached to the boom **120** via an attachment element. In an alternative embodiment, a single boom **120** attached to the base **105** via a centrally located single boom **120** aperture may attach to a bracket of canopy **125**B. A plurality of batten sleeves of the canopy **125**B may allow for canopy supports **125**A in the form of battens to be inserted into the canopy **125**B to make the canopy **125**B taut. Alternatively, a “T” rod connecting the central boom **120** to the canopy supports **125**A could be used to push apart the canopy **125**B rods, causing the canopy **125**B to become taut.

As illustrated in FIG. **9**, some preferred embodiments of the canopy **125**B may further comprise a tightened leading edge **905** that is preferably taut when the canopy **125**B is secured to the canopy supports **125**A. In one preferred embodiment, the leading edge **905** is tightened in a way that causes the material of the canopy **125**B to form ripples **910** when said canopy **125**B is attached to the canopy supports **125**A. Incorporating a tightened leading edge **905** into the canopy increases stability of the system **100** by generally causing the canopy **125**B to hold a shape that is flatter in higher wind conditions. This tightened leading edge **905** also allows the canopy **125**B to cut through the wind more consistently, further increasing stability of the system **100**. Additionally, reducing the amount of flapping in the material of the canopy **125**B increases the mechanical life of the canopy **125**B since excessive flapping of the material causes it to break down faster. Ways in which the leading edge **905** may be tightened include, but are not limited to, an internal cord, a strap along the front, rolled and sewn leading edge material, or any combination thereof.

In a preferred embodiment, tension straps connecting the canopy supports **125**A to said attachment elements may allow a user to increase or decrease the stress on the booms **120** by increasing or decreasing the length of the tension straps, which in turn may increase or decrease the width of the canopy assembly **125**. For instance, by increasing the length of the tension straps, a user may increase the total width of the canopy assembly **125** such that it is wider than the distance between the first boom **120** and second boom **120**. This in turn decreases the stress acting on the first boom **120** and second boom **120** since first boom **120** and second boom **120** are no longer bent towards one another. In another preferred embodiment, tension straps connecting the booms **120** to said attachment elements may further allow a user to increase or decrease the stress on the first boom **120** and second boom **120** in the same manner as above.

The first boom **120** and second boom **120** are preferably attached to the canopy supports **125**A of the canopy assembly **125** at an attachment point off center and towards the front end of the canopy assembly **125**. Should the weight of the canopy assembly **125** be evenly distributed, attachment in this manner will cause the back end of the canopy support **125**A to tilt downwards, creating a cross sectional surface on which wind may produce drag. The further off center and towards the front end the attachment point is on the canopy assembly **125**, the greater the tilt and the larger the cross-sectional area on which wind may act on the canopy assembly **125**. However, in instances where wind is not strong enough to create enough drag to greatly affect the downward tilt of the canopy **125**B, a user sitting beneath the canopy assembly **125** may have an obstructed view. In one preferred embodiment, a cable **130** may be attached to the front end of the canopy support **125**A, which may prevent the back end of the canopy **125**B from tilting too far downward when there is not enough wind that the system **100** may use to stabilize the canopy **125**B by naturally reducing the cross-sectional area exposed thereto. Alternatively, the cable **130** may be attached to the boom **120** or lever arm **110**.

FIG. **10** depicts a flow chart **1000** illustrating certain, preferred method steps that may be used to carry out the method of assembling the system **100**. Step **1005** indicates the beginning of the method. During step **1010**, a user having the system at a desired location may remove an end cap of said base **105**. The user may then remove the canopy supports **125**A, canopy **125**B, counterweight **115**, lever arm **110**, and booms **120** from the cavity during step **1015**. The user may then attach the leaver arm to the base **105** during step **1020**. Once the lever arm **110** has been attached, the user may determine a direction of wind during step **1025**. The user may then point the lever arm **110** attached to the base **105** towards said direction of wind during step **1030**.

The user may attach the booms **120** to the base **105** during step **1035**. The user may then place the base **105**, lever arm **110**, and booms **120** in a desired assembly position during step **1040**. In a preferred embodiment, a user may place the base **105**, lever arm **110**, and booms **120** in a grounded position **200**. Once the base **105**, lever arm **110**, and booms **120** are in a desired assembly position, the user may attach the canopy supports **125**A to the canopy **125**B during step **1045** to create the canopy assembly **125**. The user may then attach the canopy assembly **125** to the booms **120** during step **1050**. The counterweight **115** is to be filled with a substance until a desired weight is obtained during step **1055**. In a preferred embodiment, the substance is sand. Once filled, the user may attach the counterweight **115** to the lever arm **110** during step **1060**. The user may then place the system **100** in an upright position **600** during step **1065** before heading to terminate step **1070**. Some preferred embodiments of the system may include cables **130** designed to prevent the canopy assembly **125** from tilting too far forward or cables **130** and/or counterweights **115** designed to prevent the system **100** from assuming a flipped position **700**. These cables **130** and/or additional counterweights **115** may be attached by the user before or after placing the system **100** in an upright position **600**.

The implementations set forth in the foregoing description do not represent all implementations consistent with the subject matter described herein. Instead, they are merely some examples consistent with aspects related to the described subject matter. Although a few variations have been described in detail above, other modifications or additions are possible. In particular, further features and/or variations can be provided in addition to those set forth herein. For example, the implementations described above can be directed to various combinations and subcombinations of the disclosed features and/or combinations and subcombinations of several further features disclosed above. In addition, the logic flow depicted in the accompanying figures and/or described herein do not necessarily require the particular order shown, or sequential order, to achieve desirable results. It will be readily understood to those skilled in the art that various other changes in the details, materials, and arrangements of the parts and method stages which have been described and illustrated in order to explain the nature of this inventive subject matter can be made without departing from the principles and scope of the inventive subject matter.

What is claimed is:

1. A system for providing shelter comprising,
- a base configured to rotate in response to a difference in torque,
- a first boom attached to said base at a first end of said base,
- a second boom attached to said base at a second end of said base,
- a counterweight secured to said base via a lever arm,
  - wherein said lever arm is attached to said base between said first boom and said second boom,
  - wherein said counterweight and said lever arm create said torque that acts on said base,
  - wherein an angle created between said lever arm and said first boom and said angle created between said lever arm and said second boom is such that said first boom and said second boom are in an elevated position when at least one of said counterweight and said lever arm are in contact with a support surface, and
- a canopy assembly functionally connected to said first boom and said second boom,
  - wherein said canopy assembly may rotate about said first boom and said second boom to provide a smallest cross-section in a direction of wind,
  - wherein said direction of wind acts on said smallest cross-section to create a drag force.

2. The system of claim **1**, wherein said torque created by said drag force, canopy assembly, first boom, and said second boom is opposed by said torque created by said counterweight and said lever arm.

3. The system of claim **2**, wherein said torque created by said drag force, canopy assembly, first boom, and said second boom causes said canopy assembly to move towards a grounded position when greater than said torque created by said counterweight and said lever arm.

4. The system of claim **2**, wherein said torque created by said counterweight and said lever arm causes said canopy assembly to move towards an upright position when greater than said torque created by said drag force, canopy assembly, first boom, and said second boom.

5. The system of claim **1**, further comprising at least one cable configured to prevent a back end of said canopy assembly from tilting lower than a length of said at least one cable would allow, wherein said at least one cable is attached to a front end of said canopy assembly and at least one of said base, first boom, second boom, and lever arm.

6. The system of claim **1**, wherein said counterweight is a flexible container, wherein said flexible container is filled with a substance to provide a desired weight.

7. The system of claim **1**, further comprising a second counterweight attached to said canopy assembly, wherein said second counterweight prevents said canopy assembly from moving towards a flipped position.

8. The system of claim **1**, wherein said canopy assembly is connected to said first boom at a first canopy support and said second boom at a second canopy support in a way such that stress created between said first boom and said second boom causes said first canopy support and said second canopy support to move in an opposite direction.

9. The system of claim **1**, wherein said canopy further comprises a tightened leading edge, wherein said tightened leading edge increases stability of said canopy assembly, wherein said tightened leading edge reduces flapping of material of said canopy.

10. A system for providing shelter comprising,
- a base having a first aperture and a second aperture,
  - wherein at least one of a first end and a second end of said base comprises an end cap,
  - wherein said end cap removably attaches to said base in way such that a cavity of said base is accessible,
- a lever arm removably attached to said base via said first aperture,
  - wherein said lever arm and a counterweight secured to said lever arm create torque that acts on said base,

wherein said lever arm and said counterweight are configured to break down such that said lever arm and said counterweight will fit within said cavity of said base,

a boom removably attached to said base via said second aperture,

wherein said boom is configured to break down such that said boom fits within said cavity of said base, and

a canopy assembly removably attached to said boom,

wherein said canopy assembly is configured to rotate about said boom such that a smallest cross-section is provided in a direction of wind,

wherein said canopy assembly is configured to break down such that said canopy assembly fits within said cavity of said base.

11. The system of claim **10**, wherein said torque created by said canopy assembly, boom, and a drag force acting on said canopy assembly is opposed by said torque created by said counterweight and said lever arm.

12. The system of claim **11**, wherein said torque created by said canopy assembly, boom, and drag force acting on said canopy assembly causes said canopy assembly to move towards a grounded position when greater than said torque created by said counterweight and said lever arm.

13. The system of claim **11**, wherein said torque created by said counterweight and said lever arm causes said canopy assembly to move towards an upright position when greater than said torque created by said canopy assembly, boom, and drag force acting on said canopy assembly.

14. The system of claim **10**, further comprising at least one cable configured to prevent a back end of said canopy assembly from tilting lower than a length of said at least one cable would allow, wherein said at least one cable is attached to a front end of said canopy assembly and at least one of said base, boom, and lever arm.

15. The system of claim **10**, wherein said counterweight is a flexible container, wherein said flexible container is filled with a substance to provide a desired weight.

16. The system of claim **10**, further comprising a second counterweight attached to said canopy assembly, wherein said second counterweight prevents said canopy assembly from moving towards a flipped position.

17. The system of claim **10**, wherein said canopy assembly is connected to said boom in a way such that stress created by said boom causes a first canopy support and a second canopy support to move in an opposite direction.

18. The system of claim **10**, wherein said canopy further comprises a tightened leading edge, wherein said tightened leading edge increases stability of said canopy assembly, wherein said tightened leading edge reduces flapping of material of said canopy.

19. A method for assembling a dynamically orienting adjustable shelter comprising steps of,

obtaining a dynamically orienting adjustable shelter,

obtaining a desired location on which to assemble said dynamically orienting adjustable shelter,

determining a direction of wind at said desired location,

placing a base of said dynamically orienting adjustable shelter on a support surface at a desired location,

wherein said base is oriented such that a first aperture of said base is pointed into said direction of wind,

attaching a lever arm to said base via said first aperture of said base,

attaching a first boom to said base at a first end of said base,

attaching a second boom to said base at a second end of said base,

attaching a canopy assembly to said first boom and said second boom,

attaching a counterweight to said lever arm, and

rotating said lever arm and said counterweight towards said support surface to place said dynamically orienting adjustable shelter in an upright position.

20. The method of claim **19**, further comprising the steps of:

removing an end cap of said base to access a cavity of said base,

wherein said lever arm, counterweight, first boom, second boom, and canopy assembly are located within said cavity, and

removing said lever arm, counterweight, first boom, second boom, and canopy assembly from said cavity.

21. The method of claim **19**, further comprising the steps of:

attaching a first canopy support and a second canopy support to a canopy to create said canopy assembly.

22. The method of claim **19**, further comprising the steps of:

filling said counterweight with a substance until a desired weight is obtained.

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